AWIPS SOFTWARE INSTALLATION INSTRUCTION 43
(for Electronics Systems Analyst)
Maintenance, Logistics, and Acquisition Division
W/OPS12: JCS

SUBJECT	:	Maintenance Release (MR) OB2.1 Patch
PURPOSE	:	To provide installation instructions for MROB2.1 patch.
AFFECTED SITES	:	All AWIPS sites must install this maintenance release.
PREINSTALLATION REQUIREMENTS	:	AWIPS Software Release OB2.0 must be installed.
AUTHORIZATION	:	The authority for this modification note is Request for Change AB606, patch bundle MROB21_SEC_A100412.
SECURITY LEVEL	:	root
ESTIMATED TIME REQUIRED	:	Approximately 10 minutes for the maintenance release, 30 - 45 minutes for the disk repartitioning procedure, 10 to 45 minutes for the execution of localization, and 20 to 60 minutes for the execution of “push” script; based on the number of workstations.
EFFECT ON OTHER INSTRUCTIONS	:	File this note in EHB-13, Section 3.1. Discard all previous software installation instructions, prior to Build OB1 (AWIPS Software Installation Instruction Note 37) in section 3.1.
VERIFICATION STATEMENT	:	The MROB2.1 installation procedures were tested and verified at National Weather Service Headquarters, Silver Spring, MD (SLVM2), WFOs Corpus Christi, TX (CRP), Hastings, NE (GID), Newport, NC (MHX), Pittsburgh, PA (PBZ), Reno, NV (REV), and Salt Lake City, UT (VHW).
TECHNICAL SUPPORT	:	For questions or problems regarding these installation instructions or installing this release, please contact the National Control Facility (NCF) at 301-713-9344.

GENERAL:

A. MROB2.1 Patch Summary

1. Titling WWA virtual segments and access to all descriptive text fields (DR# 12907 - MDL_A100384)
2. DHR product is not auto updating (DR# 12867- FSL_A100387)
3. PX mass storage changes for OH and IFPS partitions (DR# 12876 - NGIT_A100389)

4. SRM not updating with Z/SRM combos (DR# 12885 - FSL_A100404)
5. OH cron install for PX2 to handle failover (DR# 12774 - NGIT_A100392)
6. Add 'oper' and 'ifps' to cron management scheme on PXs (DR# 12875 - NGIT_A100393)
7. Expiration date being set to current time in nwrEditor by default (DR# 12998 - SEC_A100395)
8. IFPS15 multiple domains must feed verification data to the hmdb (DR# 12857 - MDL_A100397)
9. WWA: Using ifps-*.env is a problem with IFPS15 Multiple Domains (DR# 12858 - MDL_A100398)
10. Shutting down a PX cluster also disables networking (DR# 12916 - NGIT_A100391)
11. NWWS product – 4-digit time has leading “1“ truncated at 10:00 hour (DR# 12936 - MDL_A100394)
12. Perform the initial QC check for warnings in "all" windows (DR# 12864 - FSL_A100399)
13. Radar: OTR for CFC(34) is never sent out (DR# 12982 - SEC_A100403)
14. FFMP: Gage data appears incorrectly on trend display (DR# 12955 - MDL_A100405)
15. Background processing while loading frames is broken (DR# 12976 - FSL_A100386)
16. Duplicate SRM products are not being filtered out of the RPS List (DR# 12643 - FSL_A100396)
17. LSR: Lat/lon entry (DR# 12993- MDL_A100408)
18. FFMP: Counties in multiple CWAs (DR# 13007 - MDL_A100381)

B. MROB2.1 Detailed Problem Description

MROB2.1 provides a patch bundle for the following deficiencies:

1. Titling WWA virtual segments and access to all descriptive text fields (DR# 12907 - MDL_A100384)
    a. When creating a WWA product with multiple segments that overlap the same geographical area (county/zone), "virtual" segments are automatically generated. These segments combine the descriptive text fields of the overlapping segments created by the forecaster. In complex weather situations, several virtual segments could be generated. Because of this, forecasters could get confused on which virtual segment they are editing. The virtual segment being edited by the forecaster needs to be identified. A possible solution would be to provide this information on the title bar of the text editor associated with this process. Central Region Headquarters has also requested that if possible color highlighting on the geo-viewer be done as another reference to which segment is being edited.

b. Descriptive text fields need to allow forecaster access to change text if needed. This includes clearing and upgrade/downgrade. Using a virtual window is an option. In an upgrade/downgrade function, a special case is needed to only pop up a virtual window for access to the "watch" text if continued rather than for an overlap. In an upgrade/downgrade scenario, overlap is really a replace since access to the upgraded statements has already been presented once at initiation.

2. DHR product is not auto updating (DR# 12867 - FSL_A100387)

   The DHR product fails to auto-update even though the current RPS List has the product and product is being received. The correction removes a duplicate data key in a template file that was causing an incorrect data notification to be sent to the DHR depictable.

3. PX mass storage changes for OH and IFPS partitions (DR# 12876 - NGIT_A100389)

   Disk Repartitioning of the PX mass storage and LX internal disk will be done as with a Post Installation Instruction. The new partitions support IFPS15 (WFOs) and Linux migration (RFCs). The original LX1/LX2 workstations will have an `/awips/ifps` partition created.

4. SRM not updating with Z/SRM combos (DR# 12885 - FSL_A100404)

   a. A recurring problem exists where SRMs will not update in Z/SRM displays. One manifestation of this problem has been traced to one-time requests of SRM with non-algorithm storm motions. Because of multiple SRMs for a volume scan, SRMs are saved based on the storm motion of the product. Once a user storm motion product gets in, D2D gets confused on which version to load. If there is one user storm motion, D2D tries to display only products that match this. However, if one product for one elevation has only been requested, then four panels, `all_tilts` only have one frame to load with SRM data and most of the other frames will have a "not loaded" message. When making additional requests with new storm motions, the D2D legend would sometimes say the data was there, but not display any SRM data.

   b. Some of this may apply to other products like cross_sections that can have multiple versions.

   c. Another problem related to the user storm motions is that if SRM was just loaded, then the loops will include all SRMs for each volume scan and you will have multiple frames of the same time (but different storm motions).

   d. This update fixes the following problems:

      (1) SRMs failing to update in a Z/SRM four-panel when a user requested non-algorithm SRM product is loaded in one of the four panels.

      (2) SRM-only `all_tilts` locking into the single tilt of a requested SRM.

5. OH cron install for PX2 to handle failover (DR# 12774 - NGIT_A100392)
   With the new `/awips/hydro` partition on Container #2 at RFCs, the px2apps package will move the file system in the event of a PX2 failure. With this capability, OH has

requested that the 'oper' cron follow the file system and be incorporated into PX cron management.

6. Add 'oper' and 'ifps' to cron management scheme on PXs (DR# 12875 - NGIT_A100393)

   With the addition of new partitions on the PX mass storage (i.e., `/awips/GFESuite` on Container #1 at WFOs and `/awips/hydro` on Container #2 at RFCs, the PX cron management design was enhanced to accommodate the movement of crons in the event of a failure, similar to other AWIPS HP servers).

7. Expiration date being set to current time in `nwrEditor` by default (DR# 12998 - SEC_A100395)

   The `nwrEditor` is placing the expiration of CRS bound products back to the current time by default. This means that before saving to pending or sending, first change the expiration time for the product. Field sites report this as a critical problem since it could result in a site not getting an edited warning/forecast to CRS and it could be overlooked during a busy time such as in warning mode. Currently, the sites need to manually set the expiration date each and every time they load or edit a product to avoid sending an expired product.

8. IFPS15 multiple domains must feed verification data to the hmdb (DR# 12857 - MDL_A100397)

   In order to support operations at selected OCONUS sites (e.g., AFC), it is necessary to split the County Warning Forecast Area (CWFA) into two pieces. Each of these pieces is considered a domain. Each domain produces a Digital Forecast Matrix (DFM) for the stations covered. The current setup of Verification assumes a single DFM. This update will no longer make that assumption and will reference an environmental variable and retrieve DFMs for each domain listed in that environmental variable.

9. WWA: Using `ifps-*.env` is a problem with IFPS15 Multiple Domains (DR# 12858 - MDL_A100398)

   In order to support operations at selected OCONUS sites (e.g., AFC), it is necessary to split the CWFA into two pieces. Each of these pieces is considered a domain. Several scripts within IFPS and WWA have used a syntax of `ifps-*.env` in order to source the IFPS environment. In a multiple domain configuration, this is not possible since there will be two `ifps-ccc.env` files. As a result, it is necessary to change the scripts that reference `ifps-*.env` to another method of determining the necessary environmental variables. This update adds logic to any script that sources the `ifps-ccc.env` file. This logic uses `$FXA_LOCAL_SITE` and checks to see if the file exists in `ips/adapt/ifps/localbin`. Only as a last resort is `ifps-*.env` used. Also, updated the `readenv.csh` and `readenv.sh` to remove the `ifps-*.env` sourcing and to make sure the new `IFPS_DOMAINS` environmental variable is available to Verification.

10. Shutting down a PX cluster also disables networking (DR# 12916 - NGIT_A100391)

    Under rare circumstances, the PX failover is affected by "permission denied" and "stale file handle" errors for its NFS clients. This update enhances the failover scripts and

disables the Advanced Power Management Daemon (APMD). The APMD was disabled on PX cluster members to prevent it from shutting down network interfaces required for cluster daemon operation.

11. NWWS product – 4-digit time has leading “1“ truncated at 10:00 hour (DR# 12936 - MDL_A100394)

    When an HWR NWWS product is created for 1000Z, the leading "1" is missing from the product in the header. This problem was previously fixed for 1100Z and 1200Z. For example, "1000 AM MDT WED JUN 25 2003" actually appears as: "000 AM MDT WED JUN 25 2003" Correction changes a check from a ">" (greater than sign) to ">=" (greater than or equal sign) to include the 1000Z hour when checking for the length of the time field.

12. Perform the initial QC check for warnings in "all" windows (DR# 12864 - FSL_A100399)

    Software now performs initial QC check when forecaster first enters the editor for all text windows, not just the warnGen window.

13. Radar: OTR for CFC(34) is never sent out (DR# 12982 - SEC_A100403)

    Currently, OTRs for CFC products are never sent out due to the incorrect arguments provided in script file `sendOTR.cfc.sh`. This update provides the correct arguments to the script.

14. FFMP: Guage data appears incorrectly on trend display (DR# 12955 - MDL_A100405)

    Currently, the FFMP gage trend accumulation graph does not display properly. In the FFMP trend window for the new Virtual Gage Basins functionality, the gage trend can sometimes be plotted on the wrong spot of the X-axis, causing an inaccurate and misleading display.

15. Background processing while loading frames is broken (DR# 12976 - FSL_A100386)

    IGC background processing refers to a technique that the IGC uses when it is not looping and is idle. After an IGC pane is redrawn, if no IPC or X events are pending, it will prepare a non-displayed frame for quick display. It then pauses some configurable moment of time, 'LinuxBackgroundProcessing.delayInterval'. If no events arrive during this time, it will prepare another frame. It will continue doing this background processing until all the undisplayed frames are prepared. A previous performance enhancement decreased the interval value to 1ms. This change has caused the IGC process to no longer check for X events (mouse clicks and pop-up menus) between processing background frames, thus leaving D2D non-responsive when the pie cursor is displayed. This update increases the value back to 20ms.

16. Duplicate SRM products are not being filtered out of the RPS List (DR# 12643 - FSL_A100396)

    When a merge between a National RPS List and a local RPS List occurs, if duplicate SRM products exist in the local list, the RadarServer does not filter and discard them. Instead, duplicate SRM products will result in the current RPS list.

17. LSR: Lat/lon entry (DR# 12993- MDL_A100408)

    When entering a latitude and longitude for an event in the LSR GUI, the software conducts one repetitive calculation that may change the lat/lon by one to three hundredths of a degree. This update implements additional conditions for recalculation and additional significant digits.

18. FFMP: Counties in multiple CWAs (DR# 13007 - MDL_A100381)

    FFMP is failing to monitor basins in counties which are shared by more than one County Warning Areas (CWA). Approximately 20 WFOs have counties which are shared by multiple CWAs. These counties are designated as having multiple CWA assignments in AWIPS shapefiles. FFMP can get confused on which CWA these counties belong to and might not monitor those county's basins as a result. This update is intended primarily for the following sites: AFC, AFG, AJK, BGM, BUF, CAR, GYX, GJT, FGZ, HWX, MFR, PIH, PSR, REV, RIW, SGX, SLC, STO, TWX, and VEF.

C. Pre-installation Guidelines

1. MROB2 must be installed.
2. Check http://www.ops1.nws.noaa.gov/awips_softwre.htm web page for the lessons learned document for this release.
3. Logout of all the D2D sessions on BOTH HP workstations and Linux platforms.
4. Logout of all the Text Workstations.
5. Disk repartitioning of the PX mass storage and LX internal disk will be done as with a post installation instruction. During the procedure, both PX1 and PX2 will reboot. This procedure MUST be done to support IFPS15 (WFOs) and Linux migration (RFCs). The original LX1/LX2 workstations will have an `/awips/ifps` partition created. The LX workstation will be rebooted by the script.
6. The localization-related files on DS1 must be in “baseline condition” or else a corrupt localization will be propagated throughout.

This completes the pre-installation procedure.

D. Maintenance Release Download and DS1 Installation Procedure

1. At a workstation, open a telnet window and log into DS1 as `root` :
   `rlogin ds1-<site> -l root`
2. Change to the `/data/local/ROB2.1` directory:
   `cd /data/local/ROB2.1`
3. Create a script output log file:
   `script -a ROB2.1.out`
4. Uncompress the release bundle:
   `zcat ROB2.1.tar.Z | tar xvf -`
5. Run the installation script:
   `./installROB2.1`
6. Stop the output script:
   `./stopscript`

This completes the maintenance release download and DS1 installation procedure.

E. Post Installation Configuration Checkout Procedure

1. Check the `.out` file for any files that may not have been removed or copied correctly. (Check for the following: `cannot write: Text file busy`.)
   Type:

   `grep busy ROB2.1.out`

   If any files were not removed correctly, delete them manually.

NOTE: 1. Users can log back into the HP workstations and start the D2Ds, but not on LXs. The LX workstations will reboot. Also, do not use IFPS, GFE, WWA as they also run on the LX workstations until part E is completed.

2. Disk Repartitioning Procedure (duration: 30 to 45 minutes).

IMPORTANT: All sites MUST perform the instruction below for PX disk repartitioning.

NOTE: 2. This procedure updates the PXs and LXs for `/awips/GFESuite` (WFOs - PX Container #1), `/awips/hydro` (RFCs - PX Container #2) and `/awips/ifps` (all LXs).

3. PX1, PX2, and any LX without `/awips/ifps` will be rebooted in the following steps.

a. On DS1, execute the following to prepare for disk repartitioning:

```
su - root
cd /data/local/ROB2.1
./prepare_PX_OB2.1
```

b. On PX1, execute the following commands to repartition the PX mass storage:

```
rlogin px1 -l root
cd /var/tmp
script -a -f px_ms_update.out
./px_ms1.sh
```

NOTE: 4. **BE PATIENT!** This script will shutdown the clusters, update the appropriate PX mass storage container with `/awips/hydro` or `/awips/GFESuite`, update cluster `config`, and create `/awips/ifps` on (PX1 and PX2). Both PXs will reboot.

All questions will be answered by the script. No user input is necessary.

The window WILL FREEZE while the PX1 reboot is occurring. Hit a few <CR> to release the window. When the reboot is complete, the installer will be logged out and exited back to DS1. This takes approximately 5 minutes.

```
rlogin px1 -l root
cd /var/tmp
script -a -f px_ms_update.out
./px_ms2.sh
```

NOTE: 5. This script runs `mkfs` on the new partitions and starts the cluster. All questions will be answered by the script. No user input is necessary.

```
clustat
```

NOTE: 6. Verify that cluster is up and packages are running. The location of each package (i.e., the Owner of the Service) is not important, since the next script will relocate the packages to their normal mode location. If either package is not running, **DO NOT** proceed. Contact Northrup Grumman IT support.

```
./px_ms3.sh
```

NOTE: 7. This script checks that the cluster is running, relocates package(s), if necessary, and updates `/etc/fstab` at RFCs to mount `/awips/hydro` on DS, WS, LX, and AX platforms.

(1) Verify that cluster packages are running on the appropriate PX (i.e., 'px1apps' located on PX1 and 'px2apps' located on PX2):
`clustat`

(2) Verify that the AWIPS processes have started with each package by typing:
`rsh px1 "ps -ewf | grep fxa"`
`rsh px2 "ps -ewf | grep fxa"`
`exit` [Closes scripted output file]

c. On PX1, execute the following commands to repartition the LX internal disk:
`rlogin px1 -l root`
`cd /var/tmp`
`script -a -f lx_disk_update.out`
`./lx_fix_ext.sh`

`exit` [Closes scripted output file]

NOTE: 8. This script fixes the "Extended" partition and creates `/awips/ifps`, if necessary. If the partition must be created, the LX will reboot. All questions will be answered by the script. No user input is necessary.

d. Perform the following steps on each LX:

(1) Wait approximately 5 minutes for the LX workstations that were rebooted to complete the boot cycle. Use 'ping' to check the reboot status. Ensure that the 'script' routine has been exited to avoid cluttering the scripted output file.

(2) Type the following:
`script -a -f lx_disk_update.out`
`./lx_wfo.sh`
`exit` [Closes scripted output file]
`exit` [Exits back to DS1]

NOTE: 9. This script runs `mkfs` on each LX and mounts `/awips/ifps` locally. All questions will be answered by the script. No user input is necessary.

e. On DS1, execute the following commands **on each LX** to check for creation of partitions:

-- For WFOs only --

remsh px1 "df /awips/ifps" Result => **/dev/sda14** is **/awips/ifps**
remsh px2 "df /awips/ifps" Result => **/dev/sda14** is **/awips/ifps**
remsh px1f "df | grep sdb2" Result => **/dev/sdb2** is **/awips/GFESuite**

-- For RFCs only --

remsh px2f "df | grep sdc" Result => **/dev/sdc5** is **/awips/hydro**

-- For All Sites --

remsh lx1 "df /awips/ifps" Result => **/dev/sda13** is **/awips/ifps**

This completes the post installation configuration checkout and the disk repartitioning procedures.

NOTE: 10. Users can log into the workstations and D2Ds if they have not done so already.

F. Localization and Push Script Procedure

NOTE: 11. Part F (Localization and Push Script Procedure) can be performed on another day. The procedure takes 30 minutes to 105 minutes to complete.

1. Following the localization steps, users should log out of ALL sessions and back into their workstation. This will enable the latest localization changes.
2. To enable the corrections for item #2 (DHR product is not auto updating) and item #18 (FFMP: counties in multiple CWAs), the following steps need to be performed after the installation:
   a. On DS1, execute the following "forced" localization (duration: 10 to 45 minutes; site-specific based on SCAN configuration):

```
su - fxa
cd /awips/fxa/data/localization/scripts
./mainScript.csh f -radar -scan
exit
```

b. Upon successful completion of the localization, execute the following "push" script (duration: 20 to 60 minutes; site-specific based on number of workstations):

```
su - root
cd /data/local/ROB2.1
script -a push_localization_ROB2.1.out
./push_localization_ROB2.1
./stopscript
exit
```

This completes the localization and push script procedure.

REPORTING INSTRUCTIONS

Report the completed software installation using the Engineering Management Reporting System (EMRS) according to the instructions in NWS Instruction 30-2104, Maintenance Documentation, Part 4, Appendix F. Include the following information on the EMRS Report:

Block #	Block Type	Information
5	Description	Install AWIPS Maintenance Release OB2.1 (patch bundle # MROB21_SEC_A100412)
7	Equipment Code	AWIPS
8	Serial Number	001
15	Comments	Installed Maintenance Release OB2.1 (patch bundle # MROB21_SEC_A100412) I.A.W. AWIPS Software Installation Instruction Note 43.
17a	Mod. No.	S43

A sample EMRS report is provided as attachment A.

Mark S. Paese
Director, Maintenance, Logistics, and Acquisition Division

Attachment A - EMRS Report Sample

Attachment A - EMRS Report Sample